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National Technical Information Service

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A National Environmental/Energy Workforce Assessment. Region V

National Field Research Center, Inc, Iowa City, Iowa

Prepared for

Environmental Protection Agency, Washington, D C

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A National Environmental/Energy Workforce Assessment

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16. ABSTRACT

This study is one of 70 volumes assessing the workforce needs (manpower needs) for pollution control and abatement in the United States for the five-year period of 1976 through 1981. Seven fields for pollution control — air, noise, pesticides, potable water, radiation, solid waste, and wastewater — are analyzed, together with energy-related programs currently accentuated by the national effort to solve energy supply problems.

Designed as Phase I of a three-phase program, the complete assessment includes the following volumes: one each for the 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands; one for each of the ten EPA regions; a one-volume National Abstract; a volume on National Legislation; a volume on Business and Industry; and a four-volume National Summary. The information was gathered through extensive personal interviews with responsible federal, state, and local officials in every state; with officials of representative private industrial and commercial firms; and with representatives of national industrial and trade organizations.

Phase II will develop a broad national inventory of the entire range of post-secondary and higher education training offered in the pollution control and energy areas cited above, and Phase III will offer demonstrations for curriculum changes or modifications which appear necessary to assure an adequate and properly trained national environmental/energy workforce.

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WORKFORCE ASSESSMENT

for

REGION V

Conducted by:

NATIONAL FIELD RESEARCH CENTER, INC

Under Grant from:

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

Grant #T900591010

1977

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PREFACE

This study is an overview of existing staffing levels, training programs, career potentials and major program activity areas of the Region V office of the U.S. Environmental Protection Agency (EPA). In depth coverage or analysis of programs is not the intent of this regional report. Rather, it is meant to provide basic information essential to the understanding of Region V's organization and program efforts.

Staffing level projections (1976-1982) presented are based on the best available information. The data, where not documented by records, represent the best judgments of professionals obtained during personal interviews. The areas included in this report are: air, noise, pesticides, potable water, radiation, solid waste, and wastewater.

This Regional report is designed to supplement the six reports which provide more detailed information for each of the states in Region V. These states are: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

FOREWORD

Data for this report were gathered and compiled from on-site interviews with professionals in the Environmental Protection Agency, Region V offices. Interviews were supplemented with subsequent telephone calls to clarify and validate information. It should be noted that a significant portion of the information upon which this report is based represents the best professional opinions and judgments of those persons interviewed. In instances where two or more persons provided information for a single program, figures and recommendations were compiled by the author.

This report includes information regarding seven pollution control and abatement fields of the EPA. They are: air, noise, pesticides, potable water, radiation, solid waste, and wastewater. Within the Region V EPA structure, positions and responsibilities often overlap pollution control areas. This is becoming increasingly so as new federal laws deal with substances which occur pervasively in the environment. This report includes explanations of major inter-divisional cooperative efforts and overlapping functions; categorization of the workforce was determined, as much as possible, by actual functions of the persons involved.

Emphasis was placed upon providing comprehensive information concerning workforce levels, workforce projections, reasons for growth, and career potentials. Descriptions of program responsibilities and functions are presented in abbreviated form.

National Environmental Energy Workforce Assessment

Phase I

REGION V

Report

REGIONAL PROFILE

Region V is made up of six east-north central states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. They extend from the Great Lakes and Canadian border to the Ohio River Valley; from the western foothills of the Appalachians to the Mississippi River, covering 332,351 square miles. Region V is the nation's heartland. Within its borders lies the greater part of the most extensive expanse of prime agricultural land in the world and a significant portion of the world's largest industrial complex. All but the southern and easternmost portions of the region are living demonstrations of the benefits of glacial deposits. The soils are rich, ranging from red to brown and deep black prairie loam. Average elevation for the individual states varies from 600 to 1,000 feet.

The northern tier of states maintains jurisdiction over portions of four of the five Great Lakes. They possess great numbers of glacier scoured lakes and vast stretches of forest land (much of it coniferous when settled). These forest lands are only now recovering from the massive strip-cutting, timbering heyday of the late 19th and early 20th centuries. The destructive timbering was brought about by the tremendous need to fuel industry and railroads and for building materials not available on the prairies and plains to the south and west. Devastating forest fires compounded the damage wrought by the lumbermen.

The land of Ohio, Indiana, and Illinois varies from slightly undulating in the north, to flat central prairies and former woodland, to the hill country bordering the Ohio River.

There are no major barriers to transportation in the region. In fact, the ease of transportation, first by river, then rail, enhanced economic prosperity todays super highways, combined with natural access to the Gulf and the construction of the St. Lawrence Seaway which permits access to the Atlantic via the Great Lakes, have furthered prosperity.

The region is subject to typical temperate, continental climatic conditions, modified somewhat by the Great Lakes and southerly gulf winds. The winters are cold, windy and snowy; particularly harsh in the northern three states. Summers are hot and humid; spring and autumn are distinct transitional seasons.

Long considered dominantly agrarian, the region began to boom industrially in the mid to late 19th Century. The rich Mesabi Range iron deposits of Minnesota (now depleted) and the vast coal formations of Ohio and Illinois combined to lay the foundation of Indiana's steel industry. Ohio has become the nation's most industrialized state; Illinois leads the 50 states in foreign exports. Chicago, with 7,000,000 people, is the second largest city in the country; Detroit, the fifth. The more than 44,000,000 people in the six states comprise approximately 23% of the United States' population. Urban population varies from 65% in Wisconsin to 80% in Illinois; the national percentage is 75%.

Agriculture and food processing continue as major components of the economy. Illinois leads the nation in soy bean production and annually vies with Iowa for first in the size of the corn crop. Wisconsin is the major dairying state and processes 45% of the cheese made in the United States. Minnesota grows a substantial amount of wheat. All of the states contribute heavily to the total beef and pork production. Other crops

include cranberries in the north, cotton in the south, and large poultry operations.

The region is rich in minerals. Ohio and Illinois are major coal producers. This is tempered by the high sulfur content of Illinois coal which currently inhibits its use in electrical power generation due to difficulty in meeting air pollution control standards. Although Minnesota's Mesabi Range is depleted, it still produces large quantities of iron ore from the lower quality taconite deposits. Michigan has significant copper and iron mining operations. Some petroleum is produced in the three southern states. Other operations include quarrying of limestone and sandstone for construction. Timbering continues in the north. A variety of clays form the basis for ceramic products manufacture.

The industrial portion of the region lies, for the most part, in an east-west swath through its central latitudes. Industrial cities include: Cleveland, Dayton, and Cincinnati, in Ohio; Gary, Indianapolis, and Evanston, Indiana; Chicago, Rock Island-Moline, Peoria, and East St. Louis, in Illinois; Milwaukee and Oshkosh, Wisconsin; Pontiac, Detroit, Lansing, and Battle Creek, Michigan; Duluth and Minneapolis-St. Paul in Minnesota.

Region V states lead the nation in electric and non-electric machinery production and export, automobile manufacturing, fabricated metals, nuclear electrical power generation, and food processing. They rank highly in printing and publishing, metal products manufacture, structural steel production, forest product processing, and oil refining.

Chicago is the nation's rail center; East-St. Louis, second. O'Hare International Airport is the world's busiest. The barge traffic along the Mississippi, Ohio, and Illinois Rivers is the heaviest in the world. The Ohio, alone, carries twice the tonnage as the Panama Canal. The Great

Lakes are plied with ocean-going tankers, ore, and cargo ships. The interstate highway system directs the lion's share of the cross-country truck traffic through the region.

The data listed below clearly indicate Region V's dominant position and vital role in the economic well-being of the nation.

REGIONAL V ECONOMIC STATISTICS

Item	Region V as Percent of U.S. Total	Rank as Compared With the Other Nine Federal Regions
Land Area	9.1%	6
Population	23.0%	1
Retail Sales	23.0%	1
Mineral Production	10.0%	3
Value Added by Manufacturing	29.0%	1
Hospitals	18.4%	1
Hospital Beds	21.0%	1
Elementary Schools	12.2%	2
Secondary Schools	11.2%	3
Colleges	20.0%	1
School Expenditures	21.6%	1
Non-Farm Workers	22.3%	1
Manufacturing Workers	32.8%	1
Trade Workers	21.3%	1
Personal Income	22.8%	1
Local Governments	26.7%	1
Farms	22.8%	2

Item	Region V as Percent of U.S. Total	Rank as Compared with the Other Nine Federal Regions
Farm Products Produced	20.0%	1
Farm Product Value	20.4%	1
Standard Metropolitan statistical areas (54)	20.4%	N/A
Manufacturing Firms Employing Over 500 People	31.0%	N/A
Retail Stores Employing Over 500 People	21.5%	N/A
Firms Employing Over 2500 People	31.7%	N/A
Firms Employing Over 5000 People	34.5%	N/A
Primary Metal Industries Employment	41.8%	N/A
Rubber & Plastic Product Employment	34.7%	N/A
Machinery Mfg. Employment	41.5%	N/A
Transportation Equipment Mfg. Employment	41.2%	N/A

Portions of Region V have paid heavily in terms of environmental quality to achieve industrial dominance and prosperity. Cleveland's Cuyahoga River received worldwide notoriety when it caught fire; Lake Erie has become infamous for its eutrophic conditions. Coal strip mine operations in Ohio and Illinois, and iron ore stripping in Minnesota have caused extensive loss of farmland and tailings have polluted the water. The air pollution over and downwind of Gary and other cities is particularly bad; ozone alerts are not uncommon. Erosion caused by timbering and intensive agribusiness cultivation practices is of major proportion. Solid waste and hazardous materials disposal is becoming increasingly problematic. Water table levels have dropped precipitously; water supply problems are expected to worsen as industrial uses accelerate and domestic requirements continue to rise.

Much of the pollution control work to date has been remedial; there is still much to do to correct the errors and nonchalant attitudes of the past. Meanwhile, planning and prevention will gradually receive a larger share of emphasis. The environmental problems of Region V are diverse in origin and complex in effects. An increased workforce, made up of highly trained people whose skills span a broad spectrum, will be needed to keep abreast and eventually achieve a status more truly termed environmental pollution control.

Organizational and Operational Structure

ORGANIZATIONAL AND OPERATIONAL STRUCTURE OF EPA REGION V

Generally, the headquarters office in Chicago directs its regional efforts to ensuring state compliance with Federal regulations, providing technical planning and development assistance to the states on a request basis and reviewing state assumption of primacy plans. More specifically, regional personnel are involved in laboratory and field research, enforcement activities which may include appearances before hearings, litigation proceedings and sponsoring occasional training sessions; in addition to duties carried out for the central EPA office in Washington.

Within the past year the role of the regional office, as it relates to the states, appears to be shifting from one of providing leadership and directing state environmental activities to that of acting in a technical support capacity. This operational premise advocates that the states assume optimal control for maintaining and meeting Federal requirements, as well as for developing and implementing action plans to maintain and improve environmental quality.

The individual states are seemingly anxious to assume primacy; however, a clear differentiation of where Federal control ends and state control begins has occasioned administrative confusion. This confusion is compounded by fiscal constraints at both levels. As a consequence, Region V cannot field the resource staff to the states which will fully support state priorities. Conversely, the states cannot always staff the positions to sustain their own mandates adequately. A third situation arises where a state has provided the necessary resources and is reluctant to accept

regional assistance; resulting in mis- or noncompliance with federal regulation.

Basically, the difficulties which arise between the regional office and the states are due, in large measure, to a lack of communication. Too often their activities run parallel to one another, usually out of distrust. The states feel federal regulation is being imposed on them without full understanding or interest on the part of the federal government. On the other hand, the regional office is bound to enforce regulations, and yet, assist the states. It would seem, then, that substantive dialogue ought to be initiated and, most important, continued, with the single priority of developing the means to cooperate in the best interests of those concerned. It is time to move beyond who will enforce what, when and ask questions like: What do we need to do? How can be meet our environmental needs most efficiently?

In the regional office the highest service priorities appear to be in air and water divisions which have the largest staffs. Pesticides has lost three positions which may not be filled. Solid waste, like noise and radiation, is small and not expected to grow significantly. In solid waste, legislation holds the key to staffing levels. Given a stringent land use law, the field could grow substantially, leading to specific training and certification for landfill operators. The noise field is expected to grow slowly.

The EPA Region V organization is led by a Regional Administrator and Deputy Regional Administrator responsible for supervision and execution of regional and national programs within Region V and for management of

the Great Lakes initiative program. The offices of the Regional Administrator include the Regional Counsel (a component of the Office of General Counsel at Agency Headquarters), and Audit and Inspection (audit personnel are under the supervision of the Director, Office of Audit; security/inspection personnel are under the supervision of the Director of Security and Inpsection Division, Office of Administration, at Agency Headquarters).

Offices under the supervision of the Regional Administrator include (functions abbreviated):

1) Office of Public and Intergovernmental Affairs - Serves as the focal point in the Agency for communication and liaison activities with the press, state and interstate entities, public and private groups, and the general public. Serves on inter-agency regional committees and maintains a library.

2) Office of Civil Rights and Urban Affairs - Provides advice and assistance to the Administrator on matters relating to the Regional Civil Rights Program and the Regional Public Affairs Program.

3) Office of Research and Development - Solicits and defines research and development needs specific to Agency and Regional program goals and distributes results to user groups within the region.

4) Coordinator for Ohio River Basin - Provides support to the Administrator in matters regarding the Ohio River Basin and the Ohio River Valley Water Sanitation Commission and the Corps of Engineers.

5) Great Lakes Coordinator - Provides assistance to the Administrator in this function as National Program Manager for the Great Lakes Initiative Program; coordinates implementation activities for the U.S.-Canadian Great Lakes Water Quality agreement; serves on the Board for the Great Lakes-St. Lawrence Seaway Navigation Season Extension Demonstration Program.

The Regional Administrator's offices 1976 staffing level was 55. Training and background included administration, engineering, law, science, accounting, and technical skills such as filing, stenography and computer programming.

The regional organization is composed of five divisions. They are as follows (functions are abbreviated):

1) Management Division - Provides management and planning support to the Regional Office. Functions include personnel management, general and financial grants management, automatic data processing, safety and security, facilities and space management, and general support services.

2) Surveillance and Analysis Division - Collects, analyzes, and evaluates environmental quality data; manages surveillance, pollution source inventory and monitoring activities; provides analytical laboratory support services; provides advice and assistance to state and local agencies. Conducts special studies, investigations, analyses, and surveys to provide support data for program offices within EPA, implements regional monitoring programs to meet regional and national objectives not met by headquarters programs.

3) Enforcement Division - Recommends to the Administrator goals, priorities, and objectives for regional enforcement of air, water, and pesticides laws, and the regional National Pollutant Discharge Elimination System (NPDES) permit program. Responsible for development, coordination, implementation, and evaluation of these programs. Evaluates current compliance status within the region and establishes goals and strategies for improvement of compliance. Provides guidance to the Surveillance and Analysis Division as to data needed to determine compliance status and to support enforcement actions. Participates in the review of state program plans and related performance appraisals.

4) Water Division - Recommends goals, priorities, air objectives for Regional Water Programs, and is responsible for all aspects of these programs. Participates in the review of state program plans and related performance evaluations. Assists the states in developing comprehensive programs. Administers a municipal wastewater systems grant program. Coordinates land use and water quality planning activities. Develops control strategies for non-point source dischargers. Provides

or arranges for technical assistance to other agencies for these programs.

5) Air and Hazardous Materials Division - Recommends goals, priorities, and objectives for Regional air, noise, radiation, pesticides, toxic substances, and solid waste management programs; and is responsible for these programs. Participates in the review of state program plans and performance appraisals, and assists the states in their comprehensive air programs. Provides or arranges for technical assistance of state and local agencies.

According to an EPA computerized list dated August, 1976, six hundred forty-three persons were employed in the U.S. EPA Region V offices. The following represents a breakdown by professional/skill level.

TABLE I

U.S. EPA REGION V

Current (1976) Workforce Level

	1976	Anticipated %/annum growth to 1982 (average)
Administrative	96	5%
Professional	342	5-10%
Technical	60	5-10%
Clerical	145	10%
TOTAL	643	

It should be noted that categorical errors may exist because job titles, which may not represent an individual's responsibilities accurately, were used as basis for category determination. The anticipated annual growth rate is based upon the best professional judgments of EPA administrators. Information regarding specific Region V EPA programs is contained in the following Section.

Figure 1

ENFORCEMENT DIVISION

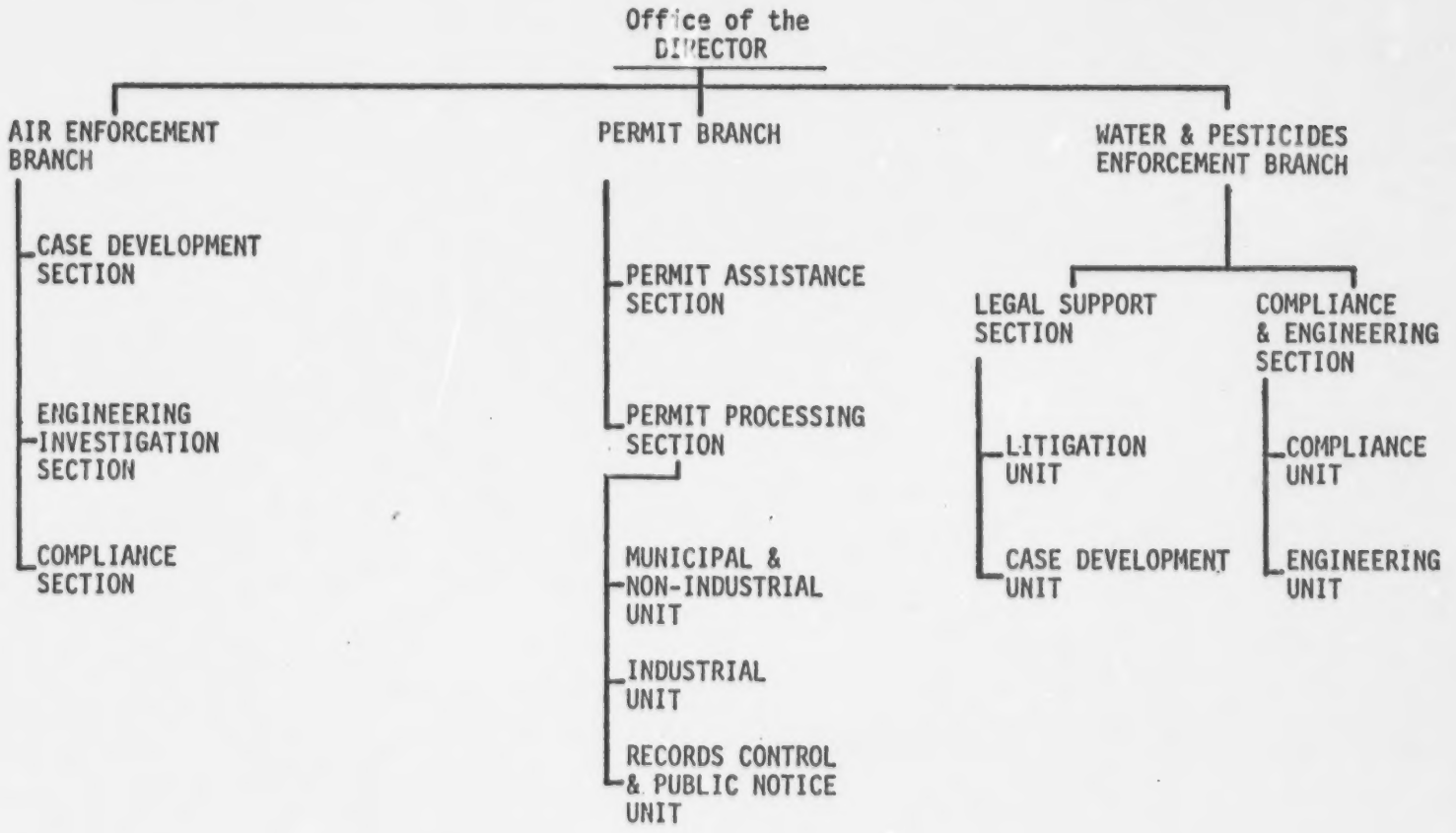


Figure 2

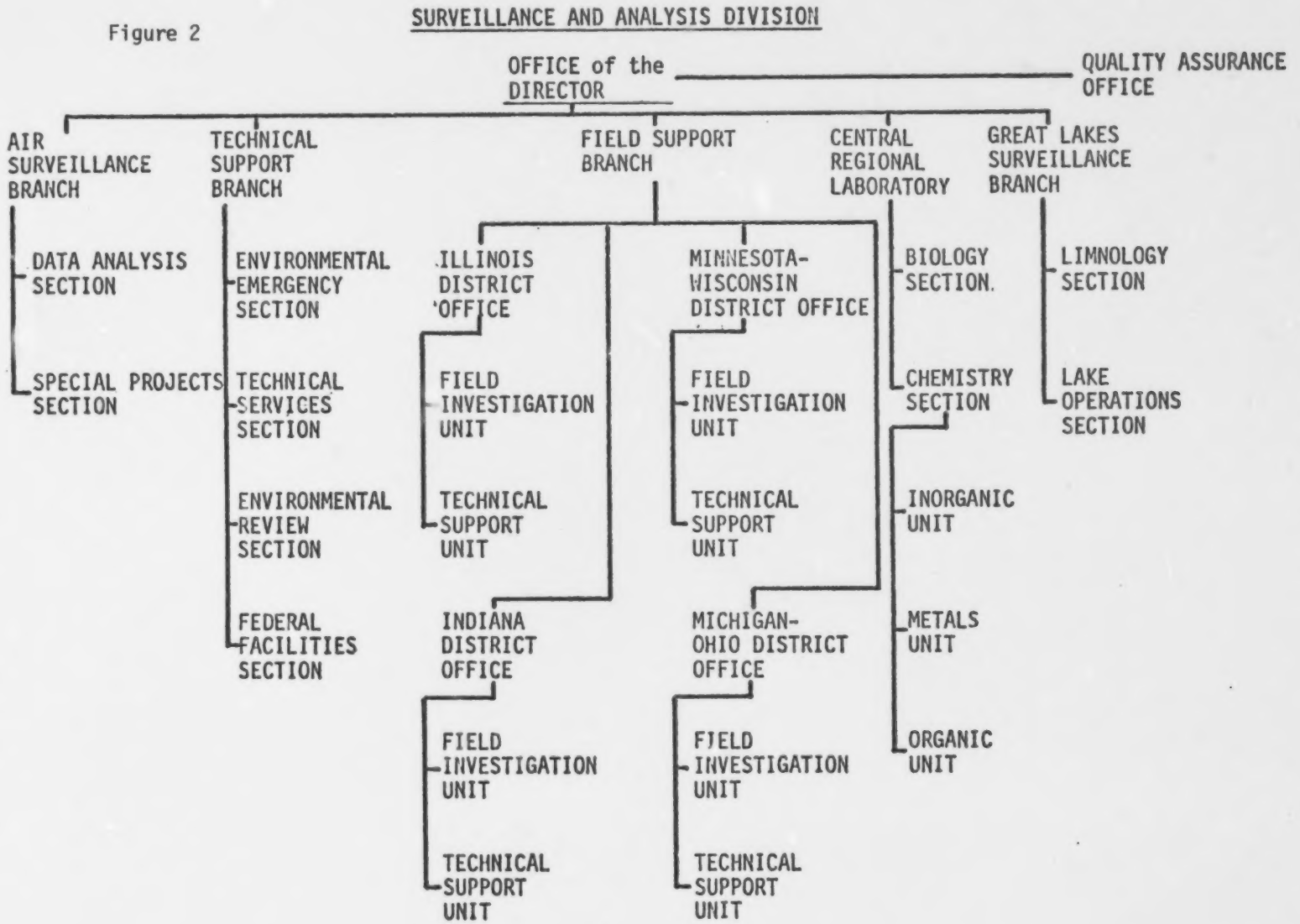

SURVEILLANCE AND ANALYSIS DIVISION
OFFICE of the DIRECTOR
QUALITY ASSURANCE OFFICE
AIR SURVEILLANCE BRANCH
DATA ANALYSIS SECTION
SPECIAL PROJECTS SECTION
TECHNICAL SUPPORT BRANCH
ENVIRONMENTAL EMERGENCY SECTION
TECHNICAL SERVICES SECTION
ENVIRONMENTAL REVIEW SECTION
FEDERAL FACILITIES SECTION
FIELD SUPPORT BRANCH
ILLINOIS DISTRICT OFFICE
FIELD INVESTIGATION UNIT
TECHNICAL SUPPORT UNIT
INDIANA DISTRICT OFFICE
FIELD INVESTIGATION UNIT
TECHNICAL SUPPORT UNIT
MINNESOTA-WISCONSIN DISTRICT OFFICE
FIELD INVESTIGATION UNIT
TECHNICAL SUPPORT UNIT
MICHIGAN-OHIO DISTRICT OFFICE
FIELD INVESTIGATION UNIT
TECHNICAL SUPPORT UNIT
CENTRAL REGIONAL LABORATORY
BIOLOGY SECTION
CHEMISTRY SECTION
INORGANIC UNIT
METALS UNIT
ORGANIC UNIT
GREAT LAKES SURVEILLANCE BRANCH
LIMNOLOGY SECTION
LAKE OPERATIONS SECTION

Figure 3

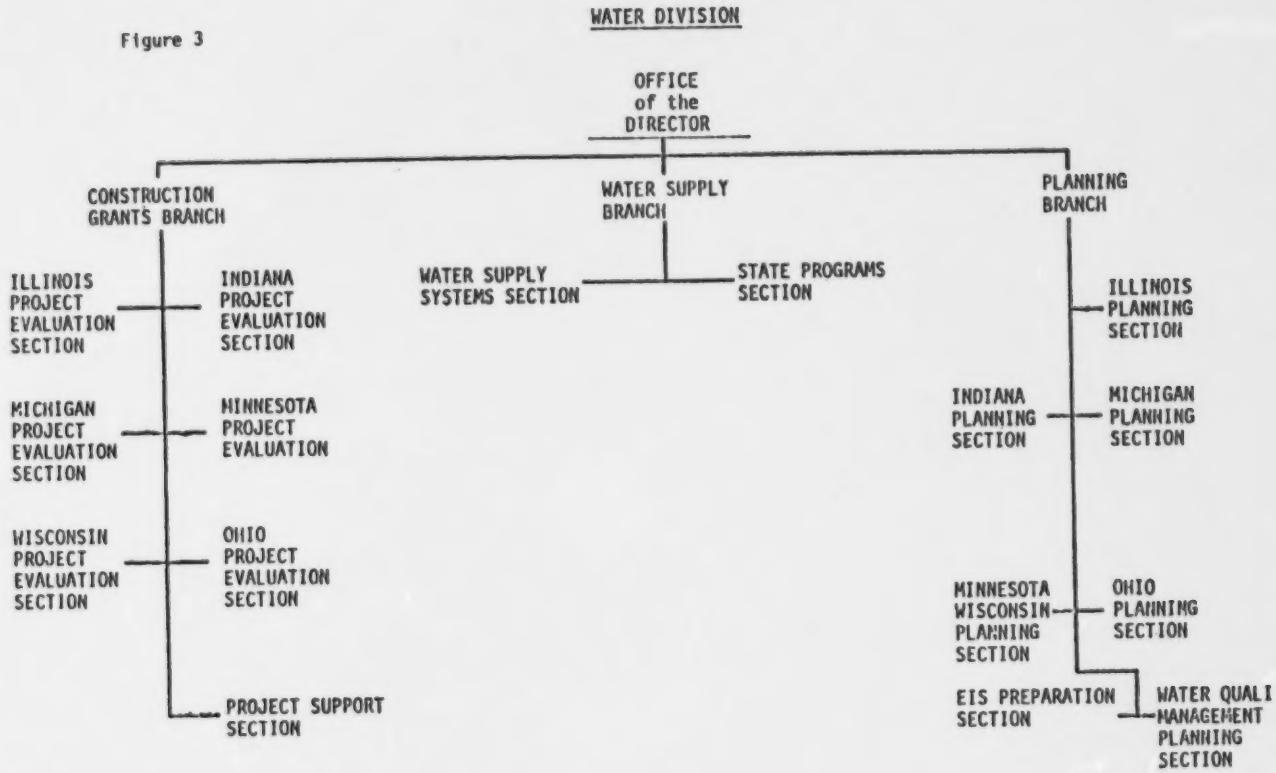

WATER DIVISION
OFFICE of the DIRECTOR
CONSTRUCTION GRANTS BRANCH
WATER SUPPLY BRANCH
PLANNING BRANCH
ILLINOIS PROJECT EVALUATION SECTION
INDIANA PROJECT EVALUATION SECTION
MICHIGAN PROJECT EVALUATION SECTION
MINNESOTA PROJECT EVALUATION
WISCONSIN PROJECT EVALUATION SECTION
OHIO PROJECT EVALUATION SECTION
PROJECT SUPPORT SECTION
WATER SUPPLY SYSTEMS SECTION
STATE PROGRAMS SECTION
ILLINOIS PLANNING SECTION
INDIANA PLANNING SECTION
MICHIGAN PLANNING SECTION
MINNESOTA WISCONSIN PLANNING SECTION
OHIO PLANNING SECTION
EIS PREPARATION SECTION
WATER QUALI MANAGEMENT PLANNING SECTION

Figure 4

AIR AND HAZARDOUS MATERIALS DIVISION

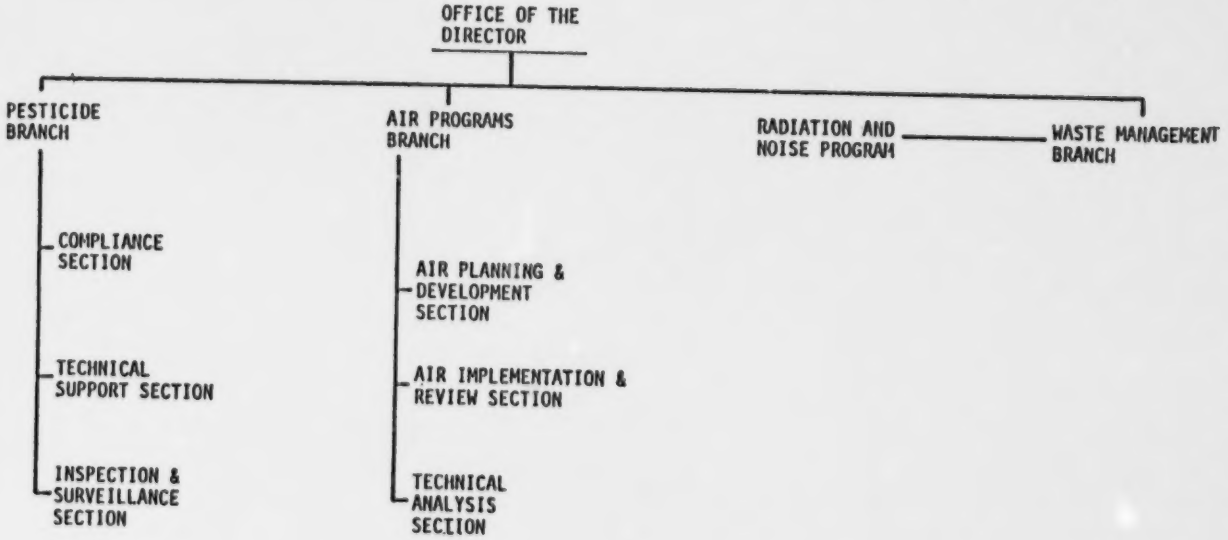


Figure 5

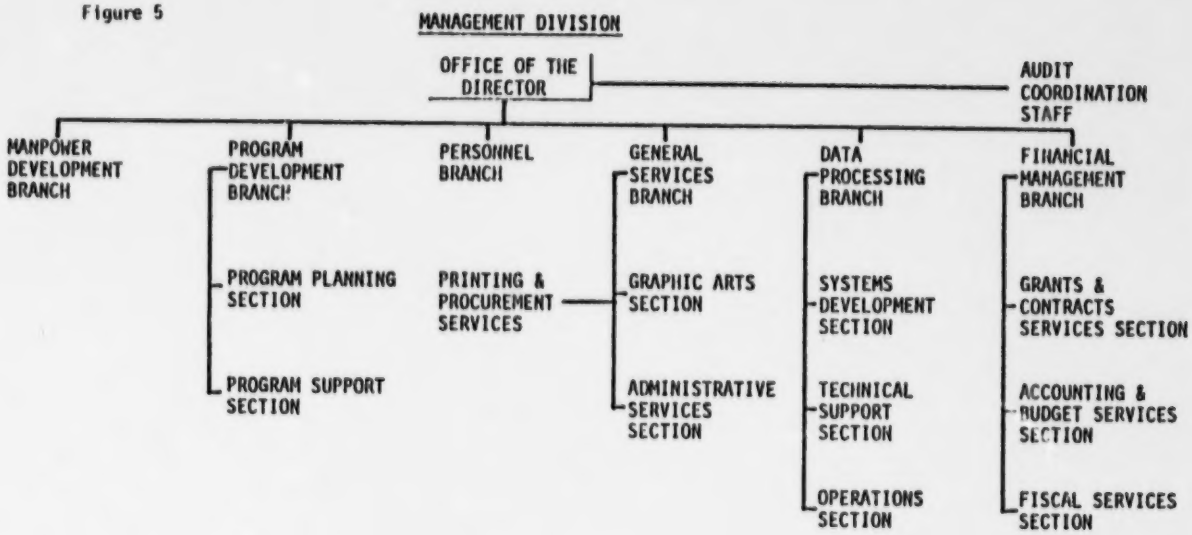
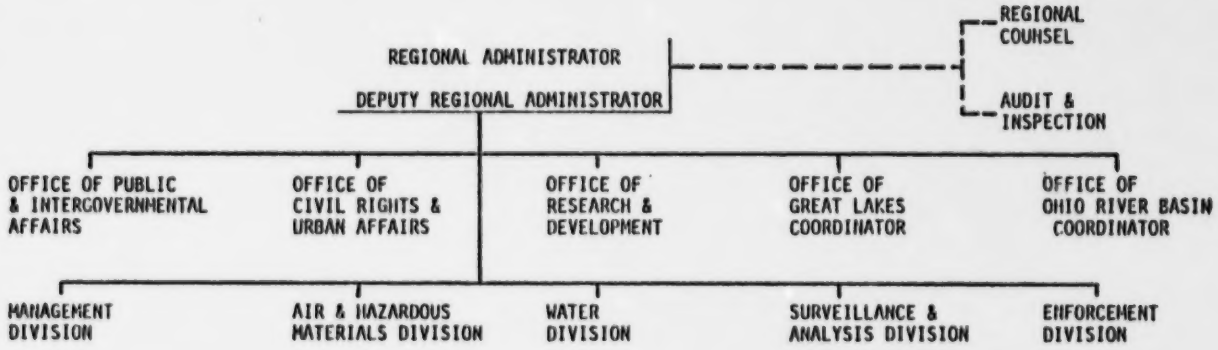

MANAGEMENT DIVISION
OFFICE OF THE DIRECTOR
AUDIT COORDINATION STAFF
MANPOWER DEVELOPMENT BRANCH
PROGRAM DEVELOPMENT BRANCH
PROGRAM PLANNING SECTION
PROGRAM SUPPORT SECTION
PERSONNEL BRANCH
PRINTING & PROCUREMENT SERVICES
GENERAL SERVICES BRANCH
GRAPHIC ARTS SECTION
ADMINISTRATIVE SERVICES SECTION
DATA PROCESSING BRANCH
SYSTEMS DEVELOPMENT SECTION
TECHNICAL SUPPORT SECTION
OPERATIONS SECTION
FINANCIAL MANAGEMENT BRANCH
GRANTS & CONTRACTS SERVICES SECTION
ACCOUNTING & BUDGET SERVICES SECTION
FISCAL SERVICES SECTION

Figure 6

REGION V
U.S. ENVIRONMENTAL PROTECTION AGENCY



Regional Pollution Control and Abatement Programs

I. AIR

A. Workforce Profile

Air pollution control activities at EPA Region V are the responsibility of the Air and Hazardous Materials Division, Air Programs Branch, through three sections: Air Planning and Development, Air Implementation and Review, and Technical Analysis. The Air Programs Branch cooperates with the Program Development, Air Enforcement, and Air Surveillance Branches.

The authority for air pollution control activities is derived from the 1970 Clean Air Act and subsequent amendments. Specific emphasis, in accordance with Headquarters' priorities, is placed upon activities related to the following areas (Sections refer to the Clean Air Act):

Section 109: National Ambient Air Quality Standards (NAAQS)

Section 110: State Implementation Plans (SIP) for prevention of the deterioration of air guality

Section 111: New Source Performance Standards (NSPS)

Section 112: National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Air Programs Branch provides technical assistance to state and local agencies in the development of program plans and other program functions, and assists the states in their comprehensive air programs as it acts as the regional authority on state air implementation plans (SIP). The Branch also develops federal promulgations if a state fails to remove air implementation plan deficiencies.

The Air Enforcement Branch of the Enforcement Division develops and implements a regional air pollution enforcement program to ensure Clean Air Act requirements are carried out. The Branch evaluates enforcement

performance of state and local agencies and provides program guidance and technical support to those efforts.

The Air Surveillance Branch of the Surveillance and Analysis Division collects and analyzes air data, and provides technical support to other divisions and states.

The following table presents the number of persons employed full-time in air pollution control work in Region V EPA.

TABLE II

EPA REGION V

Air Pollution Control
Current (1976) Staffing Level

Air and Hazardous Materials Division
Air Programs Branch

Position	1976
Engineer	
Chemical	3
Civil	1
Environmental	4
Sanitary	3
Scientist	5
Technician	2
Other	4
	22

Surveillance and Analysis Division
Air Surveillance Branch

Position	1976
Engineer	
Chemical	2
Sanitary	4
Scientist	
(Physical & Health Scientists)	8
Technician	
(Physical Scientist)	1
Other	4
	19

TABLE II(continued)

EPA REGION V

Air Pollution Control
Current (1976) Staffing Level

Enforcement Division
Air Enforcement Branch

Position	1976
Engineer	
Chemical	1
Environmental	5
Power Generation/Air Pollution	1
Attorney	6
Scientist (Env'l Protection Specialist)	2
Technician (Enforcement Assistant)	1
Other	12
TOTAL	28
GRAND TOTAL	69

Engineers constitute the largest group; scientists the second largest. Not depicted in this table is the administrative and legal support available to all programs through other Region V EPA components.

B. Workforce Projections

Turnover rates vary within the air programs; the Air Programs Branch turnover is about 10% per year; the Air Surveillance turnover rate is 8-10%, the Air Enforcement Branch has an annual turnover rate of 17% (a significant proportion is clerical).

Professional estimates as to need for increased staffing levels vary widely among the programs. Overall, the greatest increase is anticipated by the end of FY 1979.

The following table depicts workforce projections for Region V air pollution control activities. The figures represent a compilation of "best professional judgments" and are combined from the separate branches.

TABLE III

EPA REGION V

Air Pollution Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Engineer	24	33	38	40	42	45	n/a
Attorney	6	6	6	6	6	6	n/a
Scientist	15	24	30	32	34	36	n/a
Technician	4	4	4	4	4	4	n/a
Other	20	23	26	26	27	27	n/a
TOTAL	69	90	104	108	114	118	

The percent per annum growth is not applicable as professionals indicate growth will occur early in this period and slow (or as in the Air Programs Branch, cease) in the latter part.

C. Training and Certification

Upgrade training is available to the employees engaged in air pollution control at Region V EPA. The Civil Service Commission offers management, administration and basic skills courses; EPA offers technical courses. Many employees take advantage of the proximity of several universities to continue their education.

D. Career Potential

Air pollution control programs are not expected to expand significantly in the next five years. The Air Programs Branch will sustain some increases in the immediate future, then enter a no-growth phase. The others are expecting a 3 to 5% growth throughout the period. These estimates reflect air pollution control's status as a mature program effort, rather than a new, dynamic area subject to rapid expansion.

F. Conclusion

The mature program status of air pollution control will result in little expansion in staffing level, even though changes in program emphases may be significant. As emphasis is shifted, on-board staff will probably be upgraded or re-trained, and turnover replaced appropriately, to meet the demands of new emphases as former priorities and goals are approached, met, and require less commitment.

II. NOISE

A. Workforce Profile

Noise pollution control and abatement activities are placed, jurisdictionally, under the aegis of the Region V Waste Management Branch. Currently one electrical engineer is responsible for activities pursuant to the Noise Control Act of 1972 in Region V.

Technical assistance is provided to regional, state, and local agencies in the development and implementation of noise control programs and legislation. Environmental impact statements are evaluated to determine compliance with noise regulations and monitoring is conducted as a follow-up of noise products after they have been placed in the field.

B. Workforce Projections

One engineer may be added in 1978. The additional person would augment the current efforts in advising other entities (municipalities in particular) in noise-related matters.

Noise control and abatement activities are not ranked highly among the regional priorities. Sources indicate that a total of four persons responsible for noise control activities would bring the Region V program up to par. Acoustical engineers would be preferred. It is not known when these people will be added.

C. Training and Certification

The engineer responsible for noise control activities has access to all appropriate in-house courses. Should additional persons be hired, they will undergo extensive on-the-job training to become familiar with the requirements of noise control work.

The Region V noise control engineer provides extensive technical training to regional, state, and local personnel in the areas of noise regulation and ordinance development.

D. Career Potential

No new unique careers are expected to emerge in the noise control and abatement program in the next five years unless there is a dramatic change in priorities. Engineering will continue to dominate the field due to the nature of noise pollution.

E. Conclusion

Noise pollution control and abatement program activities and staffing are not anticipated to expand markedly in the next five years. Noise pollution is less noticeable or less dramatic than other forms of pollution and, thus, receives less public attention. Ongoing attempts at regulation and enforcement have often been unsuccessful due to public resistance.

New product regulations (affecting such items as buses, bulldozers, motorcycles, and household appliances) may increase the enforcement demands at the regional level, but it is too early to anticipate effects.

III. PESTICIDES

A. Workforce Profile

The Pesticides Branch of the Air and Hazardous Materials Division directs and coordinates pesticide program operations in accordance with the provisions of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as amended. The Branch consists of these sections: Compliance, Technical Support, and Inspection and Surveillance.

The Pesticides Branch is responsible for the collection of pesticides samples for laboratory analysis and label review, investigation of pesticide use accidents and incidents of possible misuse. The Branch conducts safety reviews of registered pesticides and provides technical support to the Enforcement Division on enforcement actions when violations of FIFRA are determined.

The Branch provides assistance to the states in Region V in the development of cooperative pesticide use control capabilities through the review of current and proposed pesticide programs, including enabling legislation, pesticide application certification plans, experimental permits, safety-in-use, accident reporting, state capabilities, contracts, cooperative agreements, grants, and pesticide use statistics.

Region V's FY 1977 Intermedia Priority List reflects a commitment to continued and improved pesticide use control. The third item in the second priority regional objectives is to "ensure that every state has an adequate program to certify applicators and to register pesticides for special local needs, and encourage states to cooperate with the enforcement of FIFRA."

Region V personnel feel that integrated pest management techniques are valuable components of pest control programs, but indicate that monies are used to support such programs as research efforts to provide data concerning biological control, resistant hybrids, and natural enemies. Table IV presents the current pesticides workforce levels at Region V EPA offices.

TABLE IV

EPA REGION V

Current (1976) Pesticides
Staffing Level (est.)
Air and Hazardous Materials Division
Pesticides Branch

Position	1976
Scientist	16
Other (secretaries, clerks)	6
TOTAL	22

The scientists are primarily from the biological sciences area, including agronomy and entomology. Job titles vary for the three sections. Technical support is staffed by program specialists; Compliance by investigations; and Inspection/Surveillance by consumer safety inspectors.

B. Workforce Projections

EPA will implement a Toxic Substances Program to carry out the provisions of the Toxic Substances Control Act of 1976. It is likely this program will become a component of the responsibility load of the Pesticides Branch, as there is a great deal of similarity in the type of

control activities required. Should this occur, a substantial increase in the Pesticides Branch staffing level would result. However, at this time, estimates of the size of that increase would only be conjecture; thus, the ensuing projections do not reflect increases due to the implementation of a Toxic Substances Program.

The thrust of FIFRA is to delegate as much authority and responsibility as is practical to the states. Therefore, much of the workforce increases resultant from FIFRA requirements will occur at the state level. No dramatic increases due to FIFRA are anticipated at the Regional level. There may be slight increases to meet regional level responsibilities pursuant to pesticide registration, field inspection, and accident investigation. Additional clerical support is expected to be needed.

Table V depicts the workforce projections for the Pesticides Branch according to the best estimates of professionals in the field. Potential effects of a toxic substances program are not included

TABLE V

EPA REGION V

Pesticide Pollution Control
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Scientist	16	17	18	19	20	21	6%
Other	6	6	6	6	7	7	3%
TOTAL	22	23	24	25	27	29	6%

It should be noted that although the table depicts an approximate 6% per annum increase distributed evenly throughout the time span, the increase may come more heavily in 1978 or 1979 with little or no increase occurring in the other years. Turnover in pesticides control is reported to be essentially nil.

C. Training and Certification

Pesticide programs personnel engage in much in-house training and receive informal on-the-job training in order to become knowledgeable in the field and to keep abreast of new developments, both technical and legal. Some technical upgrade training is available through programs offered by the Food and Drug Administration and the Association of Federal Investigators.

The Pesticides Branch provides information and training to state lead agencies and works with State Cooperative Extension Services, as well as with other federal agencies upon request. Such efforts are most often in the form of presentations at conferences and seminars.

Training in inspection requirements and techniques is available to the state regulatory agencies when states receive Federal Training Grants authorized by FIFRA.

D. Career Potential

Persons with education and experience in agronomy and natural science areas (especially entomology) will continue to dominate the character of pesticides control programs. Should the toxic substances program be added to the responsibilities of the Pesticides Branch, persons with education and experience in chemistry will be sought. Professionals in the field

believe there will be increased opportunities opening up for persons with expertise in regional pest problems.

E. Conclusion

Gradual, continued growth is anticipated in Region V pesticides programs as a result of increased activities pursuant to the requirements of implementation of FIFRA, as amended. The extensive agricultural practices of the states in Region V ensures the continuation of emphasis upon this program area at the regional level.

The Toxic Substances Control Act of 1976 may have a dramatic effect on the extent of duties and resultant staffing level of the Pesticides Branch.

IV. POTABLE WATER

A. Workforce Profile

The Water Supply Branch of the Water Division, Region V, EPA, is responsible for the implementation of the Safe Drinking Water Act. A major goal continues to be to assist the states to the point that each is willing and able to accept primary implementation and enforcement responsibility for the Act. Grants have been issued to all states in the Region but Indiana (which refused a grant) to determine feasibility and identify areas in need of change essential to the state's ability to carry out primacy responsibilities. Problem areas tend to be state resources, adequate staffing and state legislation (which must be as stringent as federal legislation to be effective).

The following table presents the current workforce level of the EPA Region V Water Supply Branch.

TABLE VI

EPA REGION V

Current (1976) Potable Water
Staffing Level (est.)

Position	1976
Engineer	
Civil	1
Environmental	1
General	1
Sanitary	8
Other	2
TOTAL	13

The Water Supply Branch consists of two sections, State Programs and Water Supply Systems. The former employs 4 of the engineers; the latter 7.

B. Workforce Projections

The future workload and resultant staffing levels for water supply programs at the regional office are tenuous as they are intimately dependent upon decisions within the states as to acceptance of primacy for implementation and enforcement of the Safe Drinking Water Act. The projections below are results of the best professional estimates of persons in the field, made under the assumption that the majority of the states will accept primacy. Should most of the states not accept primacy for the Safe Drinking Water Act, the impact upon regional staffing needs would be of substantial magnitude and highly conjectural at this time.

TABLE VII

EPA REGION V

Potable Water
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Engineer	11	12	13	14	15	16	8%
Other	2	5	5	5	5	5	30%
TOTAL	13	17	18	19	20	21	11%

It should be noted that the staffing level doubled between 1975 and 1976. The gradual increase depicted above assumes the regional office will not have to assume implementation responsibility for the Safe Drinking Water Act.

Presently, the Enforcement Division has little activity with regard to water supply; this activity will undoubtedly increase somewhat due to SDWA even if the states accept primacy.

C. Training and Certification

Water Supply Branch personnel have participated in workshops and seminars dealing with water supply problems, generally, and specifically with the provisions of the Safe Drinking Water Act. EPA and Civil Service Commission courses (particularly in management and administration) are open to water supply personnel. Technical training is obtained in courses and conferences sponsored by the American Water Works Association.

Training provided by the Branch to state and local agencies is severely limited because of federal policy. Some technical assistance is offered, informally.

EPA Headquarters, in cooperation with the Regional Offices, is developing training plans and programs designed to meet the needs of state and local entities in a format conducive to reaching the greatest number of people with the limited available funds. EPA has determined that this can be done best by awarding grants for curricular development. The packaged courses can then be presented by state agencies and/or community colleges or operator associations.

Plans for support of water supply training include the following:

1) Grants will be awarded to the American Water Works Association to develop a series of manuals for local officials, and to develop a basic operator training course.

2) A grant will be awarded to the Conference of State Sanitary Engineers to collate all existing training materials.

3) The EPA National Training Center will develop a short course on laboratory certification. Short courses will also be developed on bacteriological methods, organic chemical analysis, inorganic chemical analysis, and chlorine residuals.

Planning has begun for a program to assist State Training Managers, and for an agreement with the U.S. Office of Education for water supply training at state vocational education institutions. Plans are also underway for involving state rural water associations with funding from the Farmer's Home Administration in training efforts directed toward small systems.

D. Career Potential

The potable water supply field will continue to be dominated by sanitary engineers. Significant employment increases for sanitary engineers and technicians will result due to the implications of implementation of the Safe Drinking Water Act. It is not yet known whether these increases will be absorbed at the state or regional level.

Opportunities may develop for chemists and technicians in toxic substance detection. Treatment research may also be an area of increased focus of effort.

E. Conclusion

The growth in the Water Supply Branch of Region V, EPA, which occured in 1975-1976 was a gearing up process to assist the states in preparation for acceptance of primary responsibilities for implementation of the Safe Drinking Water Act. If the states accept primacy, the regional role will continue to be that of support and technical assistance, as originally intended. However, it appears likely that the regional office may have to shoulder the burden for SDWA activities in some states. This will have significant impact on staffing at the regional level. This impact cannot be assessed fully until each state has made a final decision and these decisions may not be forthcoming before FY 1979.

V. RADIATION

A. Workforce Profile

The Radiation Program of Region V EPA is under the aegis of the Waste Management Branch of the Air and Hazardous Materials Division. Currently,two persons are employed in the radiation pollution control program. There are eight program elements and subactivities for which the Radiation Program is responsible. They are primarily centered upon the development and promulgation of criteria, standards, and guidelines for the protection of the general environment from radioactive materials. They include activities regarding water quality criteria, drinking water standards and effluent guidelines for radioactive discharges. Environmental Impact Statements are reviewed and radiation guidelines are developed for other federal agencies. Support and evaluation of state programs is offered.

B. Workforce Projections

One person with a background in health physics is expected to be added to the radiation program in 1977. No further increases are anticipated for the remainder of the five year period. Although the number of nuclear power plants in the region will increase, the states are expected to assume the increased workload.

C. Training and Certification

Region V conducts no formal training in radiation. State, federal, and university training is available.

D. Career Potential

There appears to be little in career opportunity in radiation pollution control at the regional level in Region V. Opportunities are more likely to be found at the state level and in other federal agencies.

E. Conclusion

Radiation workforce levels at the regional office are expected to remain low. No new legislation is anticipated; the states have accepted major responsibilities in this field.

VI. SOLID WASTE

A. Workforce Profile

Responsibility for solid waste pollution control resides with the Solid Waste Branch of the Air and Hazardous Materials Division. Activities include the development or modification of strategies for dealing with solid waste management problems and the subsequent development of appropriate guidelines. The strategies and guidelines are directed to the collection, separation, recovery, and disposal of hazardous materials and of municipal and special types of solid waste. The Branch is responsible for implementation of strategies at federal installations, the review of environmental impact statements, and review of state capabilities to implement solid waste management strategies.

These activities are in accordance with provisions of the Solid Waste Management Act and the 1972 Federal Water Pollution Control Act, as amended. State and local agencies are assisted by grants processed by this branch under the authority of the Solid Waste Disposal Act, as amended.

The Branch is responsible for the evaluation, demonstration, and implementation of energy and material recovery technology and procedures as a result of the Resource Conservation and Recovery Act of 1976 (RCRA).

Hazardous waste program activities will be accelerated. Federal facilities will need assistance as they become demonstration points for reduction of generated waste. Minimally, the states will require technical assistance in the establishment of hazardous waste permit procedures; the regional office may have the responsibility for implementing such procedures.

The following table depicts the current staffing level of the Waste Management Branch.

TABLE VIII

EPA REGION V

Current (1976) Solid Waste Staffing Level

Position	1976
Engineer	
Chemical	1
Civil	1
Sanitary	1
Scientist	1
Other	1
TOTAL	5

B. Workforce Projections

The effects upon workforce levels at the regional office due to the Resource Conservation and Recovery Act, the Hazardous Materials Act and any land use legislation which may be forthcoming cannot be known, specifically, at this time. The impact is potentially great, especially if the states do not accept primacy.

Table IX presents the projected increases in solid waste hazardous materials workforce needs.

TABLE IX

EPA REGION V

Solid Waste/Hazardous Materials
Workforce Projections to 1982 (est.)

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Engineer	4	5	15	20	22	25	n/a
Scientist	0	0	5	10	12	15	n/a
Other	1	1	3	5	5	7	n/a
TOTAL	5	6	23	35	39	47	

Dramatic growth is depicted in the table. A significant amount is the result of upgrading of current responsibilities and known probable implications of the implementation of the new Act. Specific numbers are unobtainable at this time. The final total of 47 reflects the low estimates of professionals in the field based on the assumption that states will be reluctant to develop and implement their own programs. Enforcement, should it become the responsibility of the regional office, will push the total workforce needs even higher. The bulk of the staffing increases will probably come in FY 1979 because of the implementation stipulations of the act.

C. Training and Certification

Personnel in the Waste Management Branch often participate in short courses and seminars and attend professional meetings. Training provided by the regional office to state agencies will increase as the federal laws are implemented.

D. Career Potential

Opportunities for careers in this area will increase, especially in hazardous waste technology and resource/energy recovery and conversion. Although the field is currently dominated by engineers, sources indicate that much of the work now and in the future does not require engineering training; there may well be a shift toward recruitment of persons with backgrounds in science which is applicable to hazardous materials and resource recovery and conversion. Engineers, however, will continue to be sought, particularly chemical engineers for hazardous wastes positions, and sanitary engineers for resource recovery operations.

Specialists, often with science backgrounds but with experience in in the field, will be recruited for positions in hazardous waste management, resource recovery, and municipal and industrial waste management.

E. Conclusion

The passage of the Resource Conservation and Recovery Act of 1976 will precipitate dramatic increases in regional solid waste hazardous materials workload and workforce. Specific projections are impossible at this time as full implications of the impacts of the law at the regional level cannot be known until decisions are made at headquarters and the states determine how much of the implementation and enforcement responsibilities they will assume.

Responsibilities will assuredly increase and it appears probable that the increased needs in the staffing level will be substantial.

VII. WASTEWATER

A. Workforce Profile

Wastewater and water quality control are areas of major concern and activity at the regional level. Activities and responsibilities are centered in, but are far from limited to, the Water Division. The Construction Grants Branch manages the grant program for the construction of municipal wastewater treatment facilities. This involves review and approval of grant applications, and of construction plans and specifications; the review of bidding information and project construction management; review and approval of revenue systems, and review and authorization of grant payment matters; and assessment of completed projects and operation and maintenance programs. The Planning Branch provides overall direction to the regional water planning and water quality standards programs, including representing the region on interagency planning committees, providing policy guidance and technical assistance to federal, state, and local officials regarding EPA planning requirements. The Planning Branch also administers the Water Quality Standards Program and the Water Planning Grants Program.

The Technical Support Branch of the Surveillance and Analysis Division conducts water quality data collection, analyses, and modeling operations. The Water and Pesticides Enforcement Branch, Enforcement Division, implements an EPA enforcement program to ensure that waste dischargers are in compliance with the appropriate laws. If non-compliance is determined, appropriate action is initiated. The Permit Branch, Enforcement Division, operates the Regional NPDES permit program and monitors

the operations of the five states with NPDES authority for consistency with Federal Water Pollution Control Act requirements.

The major degree of commitment of Region V to wastewater programs is reflected in the Recommended Fiscal Year 1977 Intermedia Priority List. Three of the first priority regional objectives are wastewater related. They are:

1) Manage the Construction Grants program so that maximum water abatement is achieved;

2) Assure compliance by major dischargers with NPDES permit compliance schedules;

3) Assist the states in areawide water quality management agencies (208 agencies) to assure adequate and timely performance in the development of the water quality management process.

Second priority objectives include the commitment to assure that the release of toxic and hazardous pollutants is controlled by writing effective NPDES permits, by enforcing NESHAP regulations, and by revising inadequate water quality standards. A third priority is to assure that the states review existing water quality standards to ensure that the 1983 goals of fishable and swimable waters will be met where attainable.

Current staffing levels in water pollution control are presented in the following table.

TABLE X

EPA REGION V

Current (1976) Wastewater Staffing Level (est.)
Water Division
(Excluding Water Supply Branch and Director's Office)

Position	1976
Engineer	
Civil	14
General	1
Sanitary	37
Environmental	1
Technician	
Engineering	7
Administrative	1
Scientist	37
Other (Excluding clerical)[1]	27
TOTAL	125

Surveillance and Analysis Division, Technical Support Branch

Engineer	
Chemical	4
Civil	1
Sanitary	5
Scientist[2]	11
Technician	1
Other (Excluding Clerical)	1
TOTAL	23

Enforcement Division, Water and Pesticides Enforcement Branch

Engineer	
Chemical	4
Environmental	1
Sanitary	5
Attorney	11
Scientist	6
Other (Excluding Clerical)	5
TOTAL	32

TABLE X (continued)

EPA REGION V

Current (1976) Wastewater Staffing Level (est.)

Enforcement Division, Permit Branch

Position	1976
Engineer[1]	
Chemical	6
Civil	1
Environmental	2
Scientist[2]	
Chemist	2
Environmentalist	1
Sanitarian	1
Physical Scientist	3
Biologist	3
Technician (computer)	1
Other (Excluding clerical)	2
TOTAL	22

(1) Includes management, financial analysts, program reviewers and community planners.

(2) Includes physical scientists and environmental protection specialists.

B. Workforce Projections

Turnover rates in the wastewater programs are expected to be about 10% for all job categories.

Increases are expected to occur in Region V water quality program activities and staffing. Table XIpresents the projected increases based upon professional estimates. The totals for each category in the previous table have been combined; clerical employees are not included.

TABLE XI

EPA REGION V

Workforce Projections to 1982 (est.)
Wastewater Pollution Control

Position	1976	1977	1978	1979	1980	1981	%/annum growth (average)
Engineer	82	96	112	131	153	179	17%
Scientist	64	75	88	103	120	140	17%
Technician	10	12	14	16	19	22	17%
Attorney	11	13	15	18	21	25	17%
Other	35	41	48	56	66	77	17%
TOTAL	202	237	277	324	379	443	17%

The increases indicated are compilations of the growth indicated by professionals in each of the divisions discussed above. The 17% increase is the composite of the annual rates estimated by each division. A significant degree of variance may occur from the indications of the table regarding specific job categories. That is, it is quite likely that the increase indicated for engineering positions may be an overestimate and that of technicians a corresponding underestimate. Several of the functions now carried out by engineers can be accomplished by persons with qualifications which demand smaller salaries. Budgetary constraints may well cause several positions which become vacant due to turnover in the engineering category to be filled by technicians. Further, much of the increased workload anticipated as a result of federal legislation, as it pertains to wastewater, will be of a nature more commensurate to technician level training and experience rather than requiring an engineering background. This is particularly so of many support and technical assistance functions the region expects to provide to the states.

The specific category increases may be further skewed as changes in priorities occur in the future. Supportive role positions such as planners or specific scientific disciplines may sustain a significant change in program emphasis which could affect the projected staffing levels. Determinations as to type and method of enforcement procedures could greatly affect the number of attorneys and the other position categories in the Enforcement Division. These priority and emphasis related factors cannot be assessed adequately at this time.

Program areas subject to these presently unassessable factors include: non-point source control, 208 program management, planning needs, toxicant monitoring and field work, and NPDES permit-related work.

C. Training and Certification

EPA and Civil Service Commission courses in management and administration are available to wastewater control personnel. Wastewater employees regularly engage in in-house courses, workshops and seminars for technical training. Professionals in supervisory positions are concerned that many new entrants have an educational background which is too general, especially in the physical sciences, thus much specific job-related training must be conducted.

Regional professionals are acutely aware of the tremendous needs for upgrading of treatment plant operators. Upgrading for these people has been conducted primarily at the state level, partly due to preference expressed by the states, and partly due to budget limitations at the regional level.

D. Career Potential

Engineers will probably continue to hold the largest number of positions for a single category. However, new programs and emphasis changes in current programs may precipitate a move toward the hiring of a greater percentage of technicians, as compared to past preference for engineers. Planners are likely to be in greater demand due to 208 program management requirements.

New programs will necessitate hiring of more scientists, often with training in areas not previously sought at the regional level. High on the demand list will be toxicologists. Geologists and chemists will also be needed.

E. Conclusion

Wastewater pollution control efforts have increased dramatically in recent years. Staffing at the regional level has already seen large increases as the region attempts to fulfill its responsibilities as derived from federal legislation. These increases are expected to continue as current programs are brought to maturation and new programs, as required by law, are initiated. Growth could be further increased in areas in which the states are not able to accept the level of responsibility previously assumed to be probable.

Increased needs for new entrant and upgrade training are assured. New program areas will necessitate a great deal of training time, effort, and expense. Provisions for increased training for regional personnel and for regional training made available to the states are of primary importance to the effectiveness of wastewater pollution control programs carried out and overviewed by the Region V office.

SUMMARY

Professionals interviewed in the EPA Region V office are convinced of the need for increased staffing levels in nearly every EPA program area. Their estimates and the reflections thereof in the workforce projections are based on hard, well-substantiated needs. Total projected increase in staffing for the program areas for Region V offices is 332. This represents 15.8% of the 2,100 positions to be added to the Regional Office staffs in the overall EPA five-year plan. It should be noted that the above figure is not the optimum, but more closely represents the minimum number of people to be added to address the increased workload demand anticipated to be placed upon the Regional Office as a result of federal legislation. Actual needs cannot be pinpointed until it is known which states will accept primary enforcement responsibility for which federally legislated programs.

Other factors compound the difficulty of developing clearly defined projections. Support services are not limited to a single program area and, therefore, cannot be accurately categorized. The effects of the Toxic Substances Control Act and the Resource Conservation and Recovery Act of 1976 cannot be assessed due to their recent passage.

It appears that Region V offices will continue the strong emphasis upon engineers; however, technicians will make-up an increasingly larger proportion of the regional office workforce over the next five years. Program development in the areas of resource recovery, toxic substances, radiation, and hazardous wastes will necessitate the hiring of persons with education and experience appropriate to pollution control and

abatement in these fields. Chemists and health physicists will be sought. Training for regional employees and for state people, especially in these areas, will be essential.

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